SUMMARY

ANTIBIOTIC CONSUMPTION ANALYSIS BASED ON HEALTH INSURANCE COMPANY DATA

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Background: Overuse and misuse of antibiotics leads to increased resistance of microorganisms to antibiotics. There is a risk we will not have antibiotics effective against pathogenic microorganisms in future. It is therefore very important to make guidelines for rational prescribing and use of antibiotics.

Aim: Analyze antibiotic consumption data package collected in given period depending on consumer age or sex. Analyze which group of doctor prescribes antibiotics in most cases. Analyze the most prescribed substances depending on different expression of consumption and compare obtained data with available data.

Methods: Source of data is a database of employment insurance. The number of insurance clients was 129 699 in 2006 and 131 876 in 2007. Antibiotic use was evaluated, namely the group J01 of ATC system - Antibacterial drugs for systemic use. Data cover years 2006 and 2007. AISLP-CR, version 2008.4 is a database used for searching information about different drugs and substances. Obtained data were summarized in a database in Microsoft Excel. ATC / DDD system was used to assess rate of consumption of antibiotics. Consumption was also evaluated in number of packages prescribed.

Results: Total consumption, expressed as the number of defined daily doses per 1,000 insured persons per day in 2006 is 16.80 DID and 17.78 DID in 2007, so there is an increase in consumption. The highest consumption was in the group J01C - 7.23, followed by group J01F - 3.20 DID and J01A - 2.55 DID.

General practitioners was the group with the highest consumption in groups J01A, J01C, J01E and J01F, outpatient physicians in the hospital for groups J01D, J01G, J01M and J01X.

The number of oral dosage forms prescribed is 95.0%.

The comparison of the values DID in 2006 and 2007 shows that consumption decreased in groups J01E, J01X and J01B, group J01G has not changed and in all other groups the consumption of antibiotics increased.

Seasonal fluctuations (higher consumption in the 1st and 4th quarter) can be observed in groups J01A, J01C, J01F less pronounced in the groups J01D, J01E and J01M. Total consumption of antibiotics (J01) in the winter months is by 38.0% higher than in the summer months. The consumption of broad-spectrum penicillins, cephalosporins and macrolides is 2.7 times higher in 2006 and 2.9 times higher in 2007 than consumption of narrow-spectrum penicillins, cephalosporins and macrolides.

The consumption of tetracyclines - the group J01A - is 14.7%, thus belong to a group with the 3rd largest consumption. Doxycycline constituted 99.9% of the consumption of tetracyclines.

Group J01C - β-lactam antibiotics, reach 41.8% (7.23 DID) and thus is the group with the highest consumption. The most prescribed substances in this group are: J01CR02

(Amoxicillin and enzyme inhibitor) - 3.03 DID, J01CE02 (Phenoxymethylpenicillin) - 1.79 DID and J01CA04 (Amoxicillin) - 1.52 DID.
The consumption of antibiotics from group J01D - Other β-lactam antibiotics - is 6.4% (1.11 DID).
Substances from group J01E - Sulphonamides and trimethoprim - accounted for 6.8% of the total consumption of antibiotics in the evaluated file.
Group of macrolides, lincosamides and streptogramins (J01F) contributed 18.5% (3.20 DID) to the total consumption of antibiotics in the reference file and is therefore a group with 2nd highest consumption. The most used subctances from this group are: clarithromycin - 2.33 DID (J01FA09), azithromycin - 0.43 DID (J01FA10) and spiramycin - 0.19 DID (J01FA02).
Consumption of aminoglycosides (J01G) was 0.6%, substances from J01M - quinolone antibacterial drugs constitute 7.3% and consumption of substances from the J01X group constitute 3.9% of total consumption in the evaluated file.
In number of packages prescribed the highest consumption was in the group J01C (33.3%), followed by J01F (17.3%), J01M (12.9%) and group J01D (12.4%). 269 370 packages were prescribed in total. Substances with the highest number of packages prescribed are a combination of amoxicillin with potassium klavulanas, clarithromycin and trimethoprim with sulfamethoxazole in combination.
Conclusions: Total consumption, expressed as the number of defined daily doses per 1,000 insured persons per day is 16.80 DID in 2006 and 17.78 DID in 2007.
Antibiotics were prescribed for 36.6% of all insured persons in 2006 and 38.1% of insured persons in 2007.
The groups with the highest consumption were J01C with 7.23 DID, followed by group J01F - 3.20 DID and J01A - 2.55 DID in the period observed.
Consumption decreased in the group J01E, J01X and J01B, group J01G has not changed and in all other groups consumption of antibiotics increased - in comparison between DID in 2006 and 2007. Overall, the group J01 consumption increased.
Three substances with the highest consumption by value DID were: a combination of amoxicillin with the enzyme inhibitor, doxycycline and clarithromycin. The number of packages prescribed was 269 370. The group with the most of prescribed packages were group J01C (33.3%), followed J01F (17.3%), J01M (12.9%) and group J01D (12.4%).
Potassium klavulanas with amoxicillin, clarithromycin, and trimethoprim with sulfamethoxazole are 3 compounds with the highest number of prescribed packages. Prescribed number of packages increased in 2007 compared to the year 2006 about 10 000 packages.